

## Dactylographic Pattern Variation among the Patients of Poliomyelitis

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### ABSTRACT

**Objective:** To describe the association of Dermatoglyphic pattern with poliomyelitis patients and to support the evidence of court of law regarding identification of persons.

**Study design:** Observational descriptive study

**Place and duration of study:** Study was conducted at Avicenna Medical College, Lahore and data was collected from the Medical OPD of Children Hospital and Institute of Child Health Ferozpur Road Lahore

**Materials and methods:** Finger prints were collected from the subjects after obtaining their informed consent from month of November 2011 to August 2012. A total of 100 diagnosed patients were selected from the Medical OPD of Children Hospital and Institute of Child Health, Ferozpur Road Lahore and data were analyzed at Avicenna Medical College Lahore. Finger prints were recorded on a plain white paper with a stamp pad by plain and rolled method and same was assigned by their Name, Age, and Sex, for purposive sampling were recorded on the Proforma. Ethical clearance was obtained from the Institutional Ethical Committee.

**Results:** One hundred patients participated in these studies which were all known cases of poliomyelitis. Out of these one hundred patients the majority of the patients were belonging to Loop pattern of finger prints i.e. fifty, 50% whereas the number of patients belonging to Whorl pattern was thirty, 30% pattern of composite and Arch pattern were ten 10% only.

**Conclusion:** Each fingerprint is unique hence it can be very effectively used as an evidence for identification in the court of law. Majority of the patients was belonging to Loop pattern of finger prints followed by patients belonging to Whorl pattern and the least patterns were composite followed by Arch pattern.

**Keywords:** Dermatoglyphic, poliomyelitis, finger prints

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### INTRODUCTION

Poliomyelitis often called polio or infantile paralysis is an acute, viral, infectious disease spread from person to person, primarily via the fecal-oral route<sup>1</sup>. The term derives from the Greek *poliós* meaning "grey", *myelós* "marrow", referring to the grey matter of the spinal cord, and the suffix *-itis*, which denotes inflammation<sup>2</sup>. A global effort to eradicate polio began in 1988, led by the World Health Organization, UNICEF, and The Rotary Foundation<sup>3</sup>. These efforts have reduced the number of annual diagnosed cases by 99%; from an estimated 350,000 cases in 1988 to a low of 483 cases in 2001, after which it has remained at a level of about 1,000 cases per year

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(1,606 in 2009)<sup>4,5,6</sup>. A number of eradication milestones have already been reached, and several regions of the world have been certified polio-free. The Americans were declared polio-free in 1994.<sup>[7]</sup> In 2000 polio was officially eliminated in 36 Western Pacific countries, including China and Australia.<sup>[8][9]</sup> Europe was declared polio-free in 2002<sup>10</sup>. As of 2012, polio remains endemic in only three countries: Nigeria, Pakistan, and Afghanistan<sup>4,11</sup>, although it continues to cause epidemics in other nearby countries due to hidden or reestablished transmission<sup>12</sup>. The type of fingerprint is unique based on the genetical characteristics of each individual. The analysis of the shape of lines on the fingers of hand and foot is called dermatoglyphic. In the recent decades, a considerable improvement has been achieved in the concept of relation between the types of pattern of lines on the fingers and some individual disorders<sup>1-4</sup> Epidermal ridges are formed between 11<sup>th</sup> and 24<sup>th</sup> week of gestation; after this period epidermal ridges do not change<sup>8</sup>. The critical growth of the brain is also occurring during this

period. Since the skin and brain develop from the same ectoderm, dermatoglyphic variations are informative for early developmental brain disturbances<sup>9</sup>. There are three basic patterns of finger prints Named Arch, Loop, and Whorl.<sup>10</sup>. The arch type is divided to two subgroups: simple and tented and the loop type is divided to two subgroups: radial and ulnar.<sup>7</sup> The whorl type is divided to five subgroups as simple, central packed loop, twinned loop, lateral packed loop, and accidental <sup>7</sup>.The pattern area is the part of a loop or whorl which contains the core delta and ridges. Total finger ridges count is the most inheritable feature in dermatoglyphics. The most common pattern, a simple Loop (60-70%) is characterized by single triradius, is not advantageous for tactile perception and precession group. Whorl has two tri radi yielding two central, while simple arches have no true tri radi, resulting in zero count<sup>11,12,13</sup>. The dermatoglyphic pattern in patients of poliomyelitis is an interesting matter and little information is available about this relationship. The objective of this study is to investigate the relationship between the dermatoglyphic pattern and poliomyelitis disease and helps in the evidence of court of law regarding identification of persons.

**MATERIALS AND METHODS**

Finger prints were collected from the patients after obtaining their informed consent from the month of November, 2011 to August 2012. A total of 100 known case of poliomyelitis patients were selected from Medical OPD of Children Hospital and Institute of Child Health and data were analyzed at Avicenna Medical College Lahore. Finger prints were recorded on a plain white paper with a stamp pad by plain and rolled method and each finger print was assigned by their Name, Age, Sex, and purposive data were recorded on the Proforma. Ethical clearance was obtained from the institutional Ethical Committee. The study design was Observational descriptive one.

**Inclusion criteria:**

1. Patients of either sex diagnosed as a case of Poliomyelitis, Lahore.
2. Subjects belonging to and any ridge pattern of finger prints.

**Exclusion Criteria**

1. Patients suffering from any chronic skin disease e.g. eczema, leprosy and chronic dermatitis.
2. Patients having scars, congenital or acquired anomalies due to trauma on fingers were excluded from this study.
3. Patients not diagnosed as a case of poliomyelitis.

A proforma was designed in which data including name, age, and sex were entered. Impression of all

fingers and thumbs of both hands were taken. The impressions were taken by simple plain and rolled method. Screening of finger prints were done by using magnifying lens and scanner.

**RESULTS**

Name of pattern	No. of Pattern Found
Arch	10
Loop	50
Whorl	30
Composite	10
Total	100

Analysis in this study was descriptive .A total of one hundred patients participated in this study which were all known cases of poliomyelitis. Out of these one hundred patients the majority of the patients were belonging to Loop pattern of finger prints i-e. fifty , 50% where as the number of patients belonging to Whorl pattern was thirty ,30% pattern of composite and Arch pattern ere ten 10% only. There is need to develop a detailed and vast study to explore the association of finger print pattern with poliomyelitis patients. This study offered sensible weighting on distribution of finger print pattern among the poliomyelitis patients. Limitations of study it was only limited to Medical OPD of Children Hospital and Institute of Child Health patients and Limited only to poliomyelitis patients. The study was conducted on small and selected area; if it will be conducted on Nation wide on larger scale findings might be different and useful.

**DISCUSSION**

The role of finger printing should not be underestimated and the patterns of finger prints are unique to each and every individual due to their uniqueness they can be used to identify the culprits at crime scene and blast injuries and in mass disaster injuries and as well as for national identification.<sup>14</sup>A number of studies have indicated dermatoglyphic correlation in a large number of genetic disorders, which include diabetes mellitus <sup>15</sup>,Schizophrenia <sup>16</sup> , Congenital heart disease<sup>17</sup> , and down syndrome<sup>18</sup> . Identification is a set of individual physical characteristics, functional or psychic, normal or pathological that defines an individual.<sup>19</sup> Dermatoglyphic is a scientific method for anthropological, medico legal and genetic studies.<sup>13</sup> In our study we found Out of these one hundred poliomyelitis patients the majority of the patients were belonging to Loop pattern of finger prints i-e. fifty , 50% where as the number of patients belonging to Whorl pattern was thirty ,30% pattern of composite and Arch pattern ere ten 10% only. The reason for

such type of result might be due to sampling fluctuation, or the sample size is not adequate, sampling error or these two variables are independent and do not effect each other.<sup>18</sup>

## CONCLUSION

1. Each fingerprint is unique hence it can be very effectively used as an evidence for identification in the court of law.
2. Majority of the patients was belonging to Loop pattern of finger prints followed by patients belonging to Whorl pattern and the least patterns were composite followed by Arch pattern.

### Recommendations:

- Similar studies should be conducted on a larger sample at a National level so as to increase the accuracy of prediction.
- There is a need to evaluate the finger printing in genetical diseases along with familial diseases
- There is a need to establish Finger printing bank for research purpose.
- There should be finger printing pooling in bank of patients especially in genetical and familial disorders.

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